second change is that SWBT has withdrawn the forward-looking cost of money it used in previously-filed LRIC studies and replaced it with a much higher cost of money.

In August of 1995, SWBT began using a different set of factors than was recommended for use in previously-filed LRIC studies. Most of these factors are the same as earlier factors, or in the least based upon the same methodologies. In general, Staff had no problems with such factors. However, Staff does not agree with the use of three of these factors in the BNF LRIC studies filed in this project and is recommending that SWBT be ordered to remove them and report the related costs as common costs. SWBT does not agree with Staff's recommendation.

The three factors Staff does not agree should be used in these BNF LRIC studies are the Building Modification Investment Factor ('Building Investment Factor'), the Power Investment Factor, and the Building and Grounds Maintenance Factor. Staff's reasoning for recommending against the use of each of the three factors is similar. Staff will briefly explain this reasoning here as it applies to the Building Investment Factor.

SWBT says that the Building Investment Factor recovers building investment for equipment. It is developed by dividing Central Office Building Investment by Central Office and Circuit Investment. SWBT's method of developing this factor assumes that there is a direct relationship between the *central office and circuit equipment* and *central office building requirements* based on *dollars of investment* in central office equipment.

Staff does not believe this is appropriate for three related reasons which will be discussed in more detail in Staff's explanation of the Annual Charge Factors used in the BNF LRIC studies filed in this project (See page 71). These reasons are:

1) SWBT's method of identifying cost is based on Fully-Distributed Costing (FDC), which relies on indirect allocation rather than direct cost causation. This is contrary to the Cost Causation Principle given in Subst. R. §23.91(c)(6).

2) SWBT's method of allocating cost of building investment to a piece of equipment is arbitrarily based on the cost of a piece of central office or circuit equipment rather than its actual building modification requirements. This is also contrary to the Cost Causation Principle given in Subst. R §23.91(c)(6).

3) SWBT's Building Investment Factor is based on embedded costs, which is contrary to what Subst. R. §23.91(d)(3) requires.

The use of the Power Investment, Building Investment, and Building and Grounds Maintenance Factors that SWBT has developed for use in these LRIC studies are not appropriate for use in LRIC studies filed pursuant to Subst. R. §23.91 as they do not follow the general principles, guidelines, and instructions of the rule.

Staff also recommends that SWBT be ordered to use a lower Cost of Money than that they have used to determine the Capital Cost Factors applied to the equipment investments developed by the cost models used in the BNF LRIC studies filed in this project. Staff disagrees with the Cost of Money SWBT is using in these studies because it does not reflect forward-looking conditions. In fact, SWBT argued against using such a rate in previously-filed BNF LRIC studies because they believed it was not a forward-

looking rate. Staff agreed with them in those previously-filed studies, and still believes that the rate SWBT has started using for the LRIC studies filed in this project is not forward-looking and that SWBT should use the rate they used in previously-filed BNF LRIC studies. It should be noted that SWBT does not agree with Staff on this recommendation.

The Personalized Ring Service LRIC study filed by SWBT is the third set that have been reviewed by Staff. This service study is based on the outputs of the Personalized Ring BNF LRIC study filed in this project. Staff also offers comments on this service study.

Staff's recommendations for the BNF and Service LRICs are summarized below.

BNFs

The ALJ should order SWBT to file amended BNF LRIC studies within 60 days of the ALJ's order. It should be noted that SWBT has agreed to implement the following six recommendations. In the amended studies SWBT should:

1. Remove the application of the TPI factor to the unit investment on the ACF Sheets for the Voice Grade/DS-1 Multiplexing and the DS-3 NACC BNF LRIC studies (See page 38).

2 Correct the mistransfers of LPVST results between the **WC2/D2/MB2 Output** Page in the DS-1 NAC Investment Study Binder and the **ACF Sheets in the DS-1** NAC BNF LRIC Study Binder (See page 54)

3 Compute the switch resource capacity costs in the **Personalized Ring BNF** studies to reflect a long-run incremental approach as **required by §23.91 (See page** 58)

4. Apply the corrected switch investment to the **Feature Investment Module of** SCIS for the Personalized Ring BNFs (See page 59)

5. Correct the misapplication of the Building Investment Factor in the DS-3 Dedicated Interoffice Facility BNF, for Cost Driver Combination Large-to-Large, 20 to 50 miles, in the 'Additional Miles' Section (See page 79).

6. Include the statement(s) agreed upon by Staff and SWBT as to the existence of common costs in the Overview/Methodology of each BNF LRIC study (See page 92).

In addition, the ALJ should order SWBT to file amended BNF LRIC studies within 60 days of the ALJ's order implementing the following four recommendations, none of which SWBT agrees with. In the amended studies SWBT should:

1. Delete the Power Investment Factor and its effects (See page 68)

2. Delete the Building Investment Factor and its effects (See page 71)

3. Apply a Rate of Return no higher than that used in the BNF LRIC studies filed in Project No. 14091 (See page 81)

4. Delete the Building and Grounds Maintenance Factor and its effects (See page 88)

Service

The ALJ should order SWBT to file an amended service LRIC study within 60 days of the ALJ's order. In the amended study SWBT should:

1. Apply the inflation factor developed by Staff in the calculation of the Volume Sensitive Non-BNF Recurring Costs (See page 99)

2. Apply the Commission Assessment Factor in the calculation of the Volume Sensitive Recurring Cost for the first line of the Business Two Line Personalized Ring Service (See page 100).

3 Make a statement as to the existence of common costs **(See page 100)**

Basic Network Function LRIC Studies

Staff has reviewed SWBT's BNF LRIC Studies for DS-1 to/from DS-3 Multiplexing per Arrangement, Voice Grade to/from DS-1 Multiplexing, DS-3 Level Dedicated Network Access Channel Connection (NACC), Network Access Channel (NAC) DS-1 Level per NAC, Network Access Channel DS-3 Level Quantity 1 per NAC, Network Access Channel DS-3 Level Quantity 3 per NAC, Network Access Channel DS-3 Level Quantity 6 per NAC, Network Access Channel DS-3 Level Quantity 12 per NAC, DS-1 Dedicated Transport, DS-3 Dedicated Transport, DS-1 Dedicated Interoffice, DS-3 Dedicated Interoffice, and Personalized Ring All of these BNF studies except for the Personalized Ring study use SWBT's COSTPROG and/or LPVST computer programs in computing the capacity cost inputs to the BNF studies. This document includes an explanation of the COSTPROG and LPVST Models and Staff's method of review of and recommendations for each model and each BNF LRIC study using these models, an explanation and Staff review of and recommendations for the Personalized Ring per Line - Residence/Business BNF study filed in this project, and an analysis of the inputs to the BNF studies from the Incremental Methodology and Factors Binder used for these BNF LRIC Studies.

Despite any differences in the calculations of unit costs (which are technically investments) to be input to the BNF LRIC studies for the application of Annual Charge Factors (ACFs), the methodology is generally quite similar for the current ACF application as it was for previously-filed BNF LRIC studies (See General Counsel's Comments on *Project No. 14091, Southwestern Bell Telephone Company's Application for Approval of*

LRIC Studies for Call Forwarding Variable Per Line, Call Waiting Per Line and Touchtone Per Line, Pursuant to P.U.C. Subst. R. §23.91 (GC Comments on 14091), pages 21-40). However, due to the fact that the BNF studies filed in this project use data designed for study years 1996-1998 (rather than 1995-1997 as in previously-filed BNF LRIC studies), the values for some of the ACFs have changed. Also, the values of many ACFs vary by equipment account, and because there are different types of equipment accounts involved in the some of the BNF LRIC studies filed in this project than have been involved in previously-filed studies, ACFs between accounts may have different values than in studies filed previously. Most matters of ACF methodology and values regarding the BNF LRIC studies filed in this project shall be discussed later in this document.

I. NAC, NACC, Line Haul, and Multiplexing BNF LRIC Studies

A. Introduction to COSTPROG and LPVST

All of the BNF LRIC studies filed in this project (except for the Personalized Ring per Line - Residence/Business BNF LRIC study) use SWBT's COSTPROG and/or LPVST computer models. Both models develop unit investments that are entered into the BNF LRIC studies for Dedicated Interoffice Facility, Multiplexing, Network Access Channel (NAC), and/or Network Access Channel Connection (NACC) equipment ('DS BNF LRIC studies'). The following explanation of the COSTPROG and LPVST

programs gives some background information on the BNFs costed in the DS BNF LRIC studies and discusses differences and similarities COSTPROG and LPVST have with the SCIS (Switching Cost Information System) model used in nearly all BNF LRIC studies previously filed (See GC Comments on 14091) The Personalized Ring per Line - Residential/Business BNF LRIC study, which uses the SCIS Model, will be discussed later in this document.

B. Definitions For the DS BNF LRIC Studies

Knowledge of the following terminology is vital in understanding SWBT's COSTPROG and LPVST computer programs. Most of these definitions are based on information from SWBT representatives and Newton's Telecommunications Dictionary, Fourth Edition, and part (c) of P.U.C. Subst R. §23.91.

Buried Cable - Copper or fiber optical cable that is placed in the ground without first being sheathed in a *conduit*.

Channel - A path of communication between two or more points.

Circuit - The physical connection of *channels*, *conductors*, and equipment between two points.

Conductor - A substance that can carry an electrical current.

Conduit - A protective pipe enclosing cables that are to be placed in the ground.

Cost Driver - A specific condition, under which a BNF is provided, whose change causes significant and systematic changes in the cost of providing the BNF.

DS-1 (Digital Service, level 1) - A digital signal speed of 1.544 Million bits per second (Mbps).

DS-3 (Digital Service, level 3) - A digital signal speed of 44.736 Mbps, or the capacity of 28 *DS-1* channels

Facility - In general, a piece of equipment making up a telecommunication system. With respect to these studies, 'facility' refers to the physical line used to provide DS-1 and *DS-3* service.

Kilofoot - 1,000 feet.

Main Distribution Frame (MDF) - A wiring arrangement connecting the lines coming into a central office from the outside to the wiring inside the central office. The MDF often includes equipment for line protection and testing purposes.

Multiplexing - Also called 'Muxing,' this is the transmitting of two or more messages over a single channel or *circuit*.

Network Access Channel (NAC) - The local distribution facilities of a telephone network. In other words, the NAC is roughly composed of the lines running between the central office and the customer premises.

NAC Basic Level - A transmission path with less than 1.544 Mbps digital capacity. This level includes *voice grade*.

Network Access Channel Connection (NACC) - The interconnection between the NAC's termination on a central office's *main distribution frame (MDF)* and the office's switching or circuit equipment

Service Area Function (SAF) - Somewhat of a misnomer, this term refers to equipment necessary to allow a central office or a customer's premises to meet the requirements of a service. SAF does not include connections to switches, but includes equipment such as that *multiplexing* equipment and equipment necessary to meet the technical parameters of a BNF.

Underground Cable - Copper or fiber optical cable that is placed in the ground after being sheathed in a conduit.

Voice Grade - A channel transmitting and receiving voice conversation in the range of 300 to 3,000 Hertz (Hz), or cycles per second. This is one type of *NAC Basic Level* transmission path.

C. Background

1. Explanation of the DS BNFs

In addition to the general definitions given above, explanation of the DS BNFs in the LRIC studies filed in this project will enable a clearer understanding of the computations performed by COSTPROG and LPVST.

Network Access Channel *DS-1* Level per *Network Access Channel (NAC)* is a BNF that comprises part of the company's distribution facilities. The NAC is the connection between the LEC's *main distribution frame (MDF)* and the customer's premises. The LRIC study for this BNF uses the LPVST computer model to find the unit capacity costs of the actual cable (either copper cable or fiber optical cable) used in the NAC. The LRIC study also uses the COSTPROG computer model to find the capacity costs of the *service area function (SAF)* equipment required for the central office or customer premises to receive the cable

Network Access Channel *DS-3* Level Quantity 1 per Network Access Channel is much the same as the Network Access Channel DS-1 Level per NAC BNF, except for the fact that it can transmit more information (i.e., a capacity of 28 DS-1 *channels*). The 'Quantity' in the title of the BNF refers to the number of DS-3 lines going from a central office, and acts as a *cost driver* for some of the equipment used by this BNF.

Network Access Channel DS-3 Level Quantity 3, 6 or 12 per Network Access Channel provides the same function as the Network Access Channel DS-3 Level Quantity 1 per NAC, with a higher quantity of lines from a central office (3, 6, or 12 lines, respectively).

Voice Grade to/from DS-1 *Multiplexing* per Arrangement is a BNF that allows for 24 voice grade channels to be combined into one DS-1 signal and visa versa. This BNF uses the COSTPROG Model to calculate its unit capacity costs for input into the BNF study.

DS-1 to/from DS-3 Multiplexing per Arrangement is a BNF that allows for 28 DS-1 channels to be combined into one DS-3 signal and visa versa. This BNF uses the COSTPROG Model to calculate its unit capacity costs for input into the BNF study.

DS-1 Dedicated Transport Termination per Bandwidth Specific I/O (Interoffice) Channel is a BNF which provides interface for the transmission conversions (e.g., multiplexing) between channel connection and dedicated transport facilities. However, this BNF is not costed out separately in these BNF studies as SWB could not identify costs separately from those identified in the DS-1 Dedicated Interoffice *Facility* BNF. Therefore, SWB eliminated this BNF and included any costs (if there are any) in the DS-1 Dedicated Interoffice Facility per Bandwidth Specific I/O Channel BNF LRIC study ('DS-1 Line Haul BNF study').

DS-3 Dedicated Transport Termination per Bandwidth Specific I/O Channel is similar to the DS-1 Dedicated Transport Termination per Bandwidth Specific I/O Channel, but works at a higher level of transmission. Likewise, this BNF is not costed out in these BNF studies as SWB could find no specific BNFs for this category that could be identified separately from the DS-3 Dedicated Interoffice Facility BNF. Therefore, SWB eliminated this BNF and included any costs in the DS-3 Dedicated Interoffice Facility per Bandwidth Specific I/O Channel BNF LRIC study ('DS-3 Line Haul BNF study').

Dedicated *Network Access Channel Connection (NACC)* DS-1 Level per Channel Connection is a BNF that consists of the actual connection between the LEC's MDF and its switching equipment for DS-1 channels. In this study, no recurring costs could be identified for this BNF, since this equipment is simply a small piece of inexpensive wire.

This wire is treated as an expense, since it is disposed of every time a customer's line is disconnected. Because this wire is not treated as an investment in capital, no unit investments were calculated for this BNF. Instead, the expense for this wire is included in the Maintenance and Repair Factor for the relevant equipment in the DS-1 NAC BNF LRIC study.

Dedicated Network Access Channel Connection DS-3 Level per Channel Connection provides the same function for DS-3 channels as Dedicated Network Access Channel Connection DS-1 Level per Channel Connection does for DS-1 Channels. However, due to differences in these digital services, recurring costs could be identified for the DS-3 Network Access Channel Connection (NACC) BNF. While the DS-1 NACC is simply a relatively small wire pair that is treated as an expense item, the DS-3 NACC, because it must carry much more information, is a coaxial cable, which is treated as a capital investment. The unit investment for the DS-3 NACC BNF are developed in the COSTPROG model and entered into the BNF study.

DS-1 Dedicated Interoffice Facility per Bandwidth Specific I/O Channel is the BNF providing high capacity signal transport between central offices at the DS-1 level. Also referred to as 'line haul,' the unit capacity costs for this BNF are obtained through the COSTPROG model. The BNF LRIC study regarding this BNF will hereafter be referred to as the 'DS-1 Line Haul BNF study.'

DS-3 Dedicated Interoffice Facility per Bandwidth Specific I/O Channel is much like DS-1 Dedicated Interoffice per Bandwidth Specific I/O Channel, but is provided at

the DS-3 level. The BNF LRIC study regarding this BNF will hereafter be referred to as the 'DS-3 Line Haul BNF study.'

2. Comparison/Contrast with SCIS

Compared to SCIS (as reviewed in GC Comments on 14091), the two computer models SWBT uses to calculate investment costs for Line Haul, SAF, and Network Access Channel equipment are relatively simple. Much as SCIS does for switching unit costs, the COSTPROG and LPVST computer models perform investment studies for each BNF to find the BNF's unit capacity cost. As in SCIS, the unit capacity investment is entered onto the ACF Sheets in the BNF LRIC studies to find the BNF's Total Monthly Cost (as was described in GC Comments on 14091). Also like SCIS, the COSTPROG and LPVST Models use specific Texas central offices (and selected lines accompanying those central offices) to determine the unit capacity investment for the relevant least cost technology equipment for these sample offices (and/or lines).

However, unlike SCIS, which identifies and develops the unit investment for only one equipment account (Digital Switching Equipment), COSTPROG and LPVST involve many equipment accounts and many different types of equipment. In addition, some of the DS BNF LRIC studies use cost drivers, which were not used in any previously-filed SCIS-based LRIC studies. Also, COSTPROG and LPVST do not divide the unit investment analysis into a Model Office Module and Feature Investment Module like SCIS does. COSTPROG does, however, use one module for computing the unit investments for Line

Haul facilities (Line Haul Module), and another module for SAF facilities (SAF Module). Figure 1 lists the DS BNFs for which LRIC studies were filed in this project and the SWBT model and module(s) (where applicable) that are used in determining the unit capacity costs to be entered into the BNF LRIC studies.

Figure 1: DS BNFs and Cost Models Used in Project No. 14561

BNF Study	COSTPROG Model Line Haul Module	COSTPROG Model SAF Module	LPVST Model
NAC DS-1 Level per NAC	No	Yes	Yes
NAC DS-3 Level Quantity 1 per NAC	No	Yes	Yes
NAC DS-3 Level Quantity 3 per NAC	No	Yes	Yes
NAC DS-3 Level Quantity 6 per NAC	No	Yes	Yes
NAC DS-3 Level Quantity 12 per NAC	No	Yes	Yes
DS-1 to/from DS-3 Multiplexing per Arrangement	No	Yes	No
Voice Grade to/from DS-1 Multiplexing per Arrangement	No	Yes	No
DS-1 Dedicated Transport per Bandwidth Specific I/O Channel	N/A	N/A	N/A
DS-3 Dedicated Transport per Bandwidth Specific I/O Channel	N/A	N/A	N/A
DS-1 Interoffice Transport per Bandwidth Specific I/O Channel	Yes	No	No
DS-3 Interoffice Transport per Bandwidth Specific I/O Channel	Yes	No	No
Dedicated NACC DS-1 Level per Channel	N/A	N/A	N/A
Dedicated NACC DS-3 Level per Channel	No	Yes	No

D. COSTPROG Line Haul Module

Line haul unit investment is determined using the Line Haul Module of SWBT's COSTPROG Model. The unit capacity costs obtained for interoffice facilities from this model serve as inputs to the BNF LRIC studies for DS-1 Dedicated Interoffice Facility per Bandwidth Specific I/O Channel and DS-3 Dedicated Interoffice Facility per Bandwidth Specific I/O Channel

1. COSTPROG Line Haul Equipment Accounts

There are three different equipment accounts used in the DS-1 and DS-3 line haul BNF LRIC studies filed in this project: the *Circuit* Account, the *Underground* Fiber Account, and the *Buried* Fiber Account. The equipment in the Circuit Account is mainly composed of equipment used to connect the line haul facilities to the central office. The equipment in the two fiber accounts is composed of the fiber cable facilities between central offices.

2. COSTPROG Line Haul First Mile/Additional Miles

In addition to having three different equipment accounts, the unit costs for the DS-1 and DS-3 Line Haul BNF LRIC studies filed in this project are costed out based on equipment needed for each mile of equipment required to provide these BNFs. The first mile of the line haul facilities coming from any central office requires equipment from the Circuit Account to connect the fiber cable to the office. This first mile also requires a mile of fiber cable (whether it be underground or buried or both). However, every additional mile after the first mile requires no additional equipment from the Circuit Account and only represents investment in additional fiber for that additional mile. Therefore, each DS Line Haul BNF LRIC study has a section for the first mile, with unit costs developed for that mile for the Circuit, Underground Fiber, and Buried Fiber Accounts ('Equipment Account/First Miles' Section), as well as a section for all additional miles ('Equipment Account/Additional Miles' Section), with costs developed for all additional miles for the Underground and Buried Fiber Accounts. Note that the cost for each of the fiber accounts in the first mile is the same as the cost for each of the fiber accounts for an additional mile, since a mile of underground or buried fiber costs the same no matter which mile it is.

Figure 2 details how the three equipment accounts in the DS Line Haul BNF LRIC studies relate to the first mile of line haul facility and each additional mile of line haul facility.

Figure 2: DS Line Haul BNF Equipment Account/First-Additional Miles Sections

Equipment Account	First Mile	Additional Mile
Circuit	Yes	No
Underground Fiber	Yes	Yes
Buried Fiber	Yes	Yes

3. COSTPROG Line Haul Cost Drivers

In addition to the Equipment Account/First-Additional Miles designations, there are two cost drivers used in the COSTPROG Line Haul Module to determine the unit capacity costs in line haul equipment: wire center size and distance between wire centers.

For the purposes of the Line Haul BNFs, wire centers (central offices) can be one of two sizes. Small wire centers have up to 10,000 working lines. Large wire center have more than 10,000 working lines. The possible permutations of sizes of wire centers that can be connected to each other comprise the subcategories of cost drivers for wire center connections. These subcategories are large to large (i.e., a large wire center connected to another large wire center), large to small, and small to small.

The other cost driver used in the Line Haul Module, distance, is calculated as air miles between connected wire centers. The distance cost driver is divided into three subcategories: up to 20 miles, more than 20/up to 50 miles, and more than 50 miles.

When the different subcategories of these two types of cost drivers are combined, it can be seen that there are nine combinations of cost drivers for each of the two Line Haul BNFs in this project. These Cost Driver Combinations are summarized in Figure 3.

Figure 3: DS Line Haul BNF Cost Driver Combinations

Size Cost Driver / Miles Cost Driver	Large to Large Wire Center	Large to Small Wire Center	Small to Small Wire Center
Up to 20 miles	Large to large, up to 20 miles	Large to Small, up to 20 miles	Small to small, up to 20 miles
Over 20 to 50 miles	Large to large, over 20 to 50 miles	Large to small, over 20 to 50 miles	Small to small, over 20 to 50 miles
Over 50 miles	Large to large, over 50 miles	Large to small, over 50 miles	Small to small, over 50 miles

Note that these cost drivers occur in each DS Line Haul BNF LRIC study for each Equipment Account/First-Additional Miles Section. Therefore, because there are nine different cost drivers in each DS BNF study and there are two Equipment Account/First-Additional Miles Sections for each Cost Driver Combination, there are a total of 18 different Cost Driver Combination Sections, nine using the First Mile designation (and three different equipment accounts) and nine using the Additional Miles designation (and two different equipment accounts). Each Cost Driver Combination Section has a separate sheet in its respective BNF LRIC study wherein the appropriate ACFs are applied to the unit capacity investments obtained from the COSTPROG investment studies ('ACF Sheet') for each equipment account in that section. Thus, for every equipment account in a Cost

Driver Combination Sections, there is a separate ACF Sheet. This means there are three ACF Sheets for the First Mile designation of each Cost Driver Combination Section (for the equipment accounts for Central Office Circuit Equipment, Underground Fiber Cable, and Buried Fiber Cable), and two ACF Sheets in the Additional Miles designation of each Cost Driver Combination Section (for the equipment accounts for Underground Fiber Cable and Buried Fiber Cable). Because the nine 'First Mile' Cost Driver Combination Sections each use three ACF Sheets and the nine 'Additional Miles' Cost Driver Combination Sections each use two ACF Sheets, there are 45 different ACF Sheets for each Digital Service Line Haul BNF LRIC study. Since there are two such studies (DS-1 and DS-3), there are a total of 90 different ACF Sheets. Figure 4 summarizes the structure of the DS-1 Line Haul BNF LRIC study. The DS-3 Line Haul BNF LRIC study is structured identically.

Note that each of the cells in the table below represent an output from the COSTPROG investment study, to which the ACFs are applied on an ACF sheet in the BNF LRIC study.

Figure 4: Structure of DS-1 Dedicated Interoffice Facility per Bandwidth Specific I/O Channel BNF LRIC Study

Equipment Acct/ Mile / Cost Driver Combination	Circuit/ First	Undgrd Fiber/First	Buried Fiber/First	Circuit/ Add'l	Undgrd Fiber/Add'l	Buried Fiber/Add'l
Large-Large, 0 to 20 miles	L-L, 0-20, Circuit, 1st mile	L-L, 0-20, UG fiber, 1st mile	L-L, 0-20, Brd. fiber, 1st mile	N/A	L-L, 0-20, UG fiber, Add'l mile	L-L, 0-20, Brd. fiber, Add'l mile
Large-Large, 20+ to 50 miles	L-L, 20+-50, Circuit, 1st mile	L-L, 20+-50, UG fiber, 1st mile	L-L, 20+-50, Brd. fiber, 1st mile	N/A	L-L, 20+-50, UG fiber, Add'l mile	L-L, 20+-50, Brd. fiber, Add'l mile
Large-Large, 50+ miles	L-L, 50+, Circuit, 1st mile	L-L, 50+, UG fiber, 1st mile	L-L, 50+, Brd. fiber, 1st mile	N/A	L-L, 50+, UG fiber, Add'l mile	L-L, 50+, Brd. fiber, Add'l mile
Large-Small, 0 to 20 miles	L-S, 0-20, Circuit, 1st mile	L-S, 0-20, UG fiber, 1st mile	L-S, 0-20, Brd. fiber, 1st mile	N/A	L-S, 0-20, UG fiber, Add'l mile	L-S, 0-20, Brd. fiber, Add'l mile
Large-Small, 20+ to 50 miles	L-S, 20+-50, Circuit, 1st mile	L-S, 20+-50, UG fiber, 1st mile	L-S, 20+-50, Brd. fiber, 1st mile	N/A	L-S, 20+-50, UG fiber, Add'l mile	L-S, 20+-50, Brd. fiber, Add'l mile
Large-Small, 50+ miles	L-S, 50+, Circuit, 1st mile	L-S, 50+, UG fiber, 1st mile	L-S, 50+, Brd. fiber, 1st mile	N/A	L-S, 50+, UG fiber, Add'l mile	L-S, 50+, Brd. fiber, Add'l mile
Small-Small, 0-20 miles	S-S, 0-20, Circuit, 1st mile	S-S, 0-20, UG fiber, 1st mile	S-S, 0-20, Brd. fiber, 1st mile	N/A	S-S, 0-20, UG fiber, Add'l mile	S-S, 0-20, Brd. fiber, Add'l mile
Small-Small, 20+ to 50 miles	S-S, 20+-50, Circuit, 1st mile	S-S, 20+-50, UG fiber, 1st mile	S-S, 20+-50, Brd. fiber, 1st mile	N/A	S-S, 20+-50, UG fiber, Add'l mile	S-S, 20+-50, Brd. fiber, Add'l mile
Small-Small 50+ miles	S-S, 50+, Circuit, 1st mile	S-S, 50+, UG fiber, 1st mile	S-S, 50+, Brd. fiber, 1st mile	N/A	S-S, 50+, UG fiber, Add'l mile	S-S, 50+, Brd. fiber, Add'l mile

Legend: UG= Underground, Brd.= Buried, L= Large, S= Small

4. Computation of Line Haul Unit Investment

For each DS Line Haul BNF LRIC study, the COSTPROG Model uses four tables to calculate the first and additional mile per channel unit investments in dedicated interoffice facilities for each equipment account applicable for each of the Cost Driver Combinations (for example, the Large to Large, 0 to 20 miles, Circuit Account, 1st mile unit investment for the DS-1 Dedicated Interoffice Facility per Bandwidth Specific I/O Channel BNF) There is one set of these four tables for each Cost Driver Combination in the BNF, making for nine sets of COSTPROG Line Haul Module tables for DS-1 and another nine sets for DS-3. These tables are located in the DS-1/DS-3 Dedicated Interoffice Facility BNF Investments Binder. There is one set of these tables behind each numbered tab in this binder.

a. Route Inventory Table

The first of the four tables is the Route Inventory Table. One important piece of information this table lists is the sampled wire centers which the interoffice facilities interconnect (the 'A' Location and the 'Z' Location).

This table also gives a Route Investment, or the fixed investment in circuit equipment necessary to provide the BNF between the 'A' and 'Z' wire center locations using the least cost route. This least cost route is determined by SWBT based on